Building Humane Places

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Abstract

Evolution has left man with certain adaptations to many environments, so we should do well to look at man very closely from an ecological point of view, and to ease his adaptation to his environment. In fact, the greatest problems of the future in man's relationship with his environment will result from population explosion. This will lead to greater exploitation of the environment for its raw materials with the additional housing required which will lead to increased congestion and pollution, and greater tracts of land, water and air polluted by the waste of products.

Keywords: Formalism, prefabrication, housing, personal stability, illumination, poverty

Introduction

For the development of Modern Movement, building and city planning should be concerned solely with superficial and ornament beautification. Changing social and economic forces modify our manner of living. Growing industrialism and accumulating population demand housing reform. A new architectural style is slowly forming out of these problems, impelled partly by the force that shape cities. Development of the new style must be characterized by an impersonal generality. It is being created not mainly by the professional architect, but by manufacturers of building materials and specialties. Formerly, quality depended on luxurious requirements of the wealthy and manual skill of individual craftsmen, now it is developed by means of an extensive engineering apparatus, the perfection and profitable maintenance of which is based upon mass production, mass consumption and economy of cost. New architecture of prefabricated industrial parts are the only means of meeting the new century's building needs.

Now, large single volumes wrapped in shells have to be lighted and heated in a manner more generous than the cubical interior of the Egyptian tradition. The blanket most commonly in use to cover all the tendencies in Modern architecture that deviate from the Functionalist norms of geometrical purity and plan-wise asymmetry is Formalist. New shapes are still the same old architecture, in the sense that the architects involved have relied on Formalism. Art Nouveau is the style of our own time of the machine age, as the slogan of Le Corbusier "a house is a machine for living in." This would be a radical criticism of current architectural concepts that need improvement in detail. Le Corbusier's Murondin project for installing sophisticated mechanical services in mud-huts shows a great radicalism of approach. Then it must be accepted that the human environment under consideration are constructed environments, static, more permanent and designed to operated without the consumption of too much mechanical energy.

As an increasing area of the earth's surface is built on, we may reduce the number of photosynthesizing plants to such extent that we find ourselves with insufficient oxygen. Some

ecologists believe that already the level of carbon dioxide is building up to such an extent that it forms a heat-trapping barrier around the earth. Thus there may be a rise in average temperatures which, if it exceeds four or five degrees, could melt the polar ice caps. Sea level might rise by 100 metres, thus flooding the world's major cities. Conversely, the dust, fumes, and water vapor which are spewing into the atmosphere may form another kind of barrier which keeps out the sun's heat. Thus the planet will cool down, rain will be precipitated, it will freeze, and thus a new ice age will be formed.

The Free Floor Plan

The respects paid by the early masters of Modern architecture was not paralleled by an attempt to mimic the form of their work. Nowadays the desire to incorporate engineering forms into architectural designs is overwhelming that engineers have never had before. There is the possibility of freeing of floor space from intermediate supports which new vaulting techniques and space-frame trusses make possible, is being used in great clear spaces which make possible a free and untrammelled functional disposition of interior spaces. One is reminded of Mies van der Rohe's project for a theatre in a giant aircraft hangar. This trend has been with us since the beginning of this century, the marriage of the logical objectivity of abstract aesthetics to the experimental objectivity of advanced science. However, there is a division of mind here between architects and engineers that goes much deeper. The operational lore of the architectural profession has assimilated prefabrication as a technique applied to fairly small repetitive components to be assembled on site. Such an arrangement leaves the determination of functional volumes still in the hands of architects.

Communicating with Nature

Pugin, Ruskin, and Morris, who had looked at the industrial city and found it evil, postulated a return to human value based on contact with nature, the use of natural materials, hand-craftsmanship, view which were extended by the Garden City theorists, by Frank Lloyd Wright, Lewis Mumford, and others. Man flourishes on the rapid crowding of changing images and the unexpectedness of onrushing impressions, impressions which take a regular and habitual course and show regular and habitual contrasts instead of the rushing stimuli of metropolitan life. However, differences in the processing of sensory stimuli could help to account for differences in preference for metropolitan or rural life, according to the style of life in which man has chosen to live without which the whole structure would break down into extricable chaos. We should do well therefore, in reading any predictions concerning architecture and the built environment, to assess the predictor's own, personal orientation to be happy about the future.

People expect artists to be original, architects are artists and therefore they should be original, however every building occupies a site and it works well on that site then it cannot work so well in every respect on any other site. However, it may work bad if an identical building is built next to it. A building, among other things, is a device which modifies the climate, a filter between the external environment and the users within. Man's relationship with the building will be a

perceptual one, a set of transactions between the stimuli his sense receives and his previous experience, and these acting together will determine his reactions to the building. Buildings are considered good when they encourage close communication with nature. The glass house by Philip Johnson provides views to the trees, grass, and sky from the inside of the house with little interruption from the structure itself.

When an individual is confined to a darkened room, which is also well insulated against external noise, strange things may happen to him. In extreme cases, subjects may experience hallucinations. Normal consciousness, perception and thought can be maintained in a constantly changing environment. Where there is no change, a state of sensory deprivation occurs, boredom, restlessness, lack of concentration and a reduction in intelligence. A window in a room will admit daylight, changing by time in quality and quantity. Each building has it characteristic smell, the smells of road and traffic, also other sources of smells inside the building like cooking. Le Corbusier advised that one should place the kitchen at the top of the building! In this case the slogan for Form follows Function should be replaced by Form follows Activity.

Illumination

The way in which different tasks make different demands upon sight and with the advance of visual strain there are close interrelations of the two because the physiological structures of the eyes and its controlling muscles are such that, whatever the nature of the visual task and whatever the lighting conditions, they must adapt constantly so as to give the sharpest and clearest possible picture of the task. Strain occurs when the muscular system is pressed too hard for too long, and this will occur if one concentrates on fine detail under inadequate illumination. The performance of such tasks depends on one's ability to see. One's performance will be conditioned by the illumination level to which one has already adapted. For example, subjects adapted to 8 foot-candles choose 12 foot-candles as the optimum illumination, whereas if one was adapted to 52 foot-candles, one will choose 52 foot-candles as the optimum level of illumination. This means that the act of measuring people's preferences will be very difficult. In optimizing on a single criterion this affects the other senses, for every decision which is taken has some effect on its environmental characteristics. Thus 2% daylight factor is quite reasonable for visual tasks. If the windows are too large, we will be faced with other problems; thermal comfort will be a problem in winter and summer. Noise will be another source of interruptions. For residents will be affected in their kinaesthetic sense and their sense of equilibrium, the building would be revolutionary and quite unlike anything they had seen before. Given that people want windows to the external environment, evidence from lighting, heating, and sound control studies suggest that these windows had better be small and located in heavy external walls. I have done this in the buildings I have designed in Cairo, Egypt. All the users are satisfied in all seasons especially in summer. The designs were based on sensory needs.

The Building Envelope

Most buildings have horizontal floors and ceilings and vertical walls. Some primitive tribes have no such expectations. They may live in circular huts, so one might assume that they bring different expectations in terms of equilibrium to buildings. Normal building will modify the climate at a particular place so that certain human activities can be carried out conveniently and comfortably. This will require an external envelope which separates the internal ambience from the external environment in terms of controlling heat, light, sound, and smell. Heat control will require control of the heat loss. The building construction will absorb heat from the environment and from the heating system and acts as a thermal flywheel so that temperature swings will be slow. Unshaded windows in south-facing elevations should not exceed 15% of the total wall area. Where larger windows are used, various expedients may be used such as screens, louvers, projecting fins or canopies. In order to control sky glare, solar glare, heat gain, and external noise, windows should be kept as small as possible and used only to provide views of the external environment.

Where windows are used for illumination, their undesirable effects can be controlled by deep splayed reveals reflecting daylight into the room, by use of windows on adjacent walls, views of ground and buildings outside and by light colored surfaces within the room. Rooms can be much deeper and the building shape can approach cubic form. A building is for modifying the indigenous climate so that certain activities can be pursued in comfort, its location is determined by factors other than climate but is concerned with communications, with proximity to markets, sources of labor, work, schools, shops, or even entertainment. If there is not site available, then at least one can modify what is available by means of local materials.

The strength of the wind decides the main shape of the built space. The distribution of the air curtain can be governed by electronic light and weather sensors. Building types and methods of construction are repeated because they were known to work in terms of construction and the modification of climate to the activities it was required to house. If a design has proved its worth, then there is no reason to change it. This is the result of cultural pressures. Once one had plotted room shapes, the drawing itself suggest a particular building form which could be developed analogically and our building will be relevant to the time in which it was built.

Thinking of building in functional and biological terms as giving shape to the living process leads to pure construction. These constructions are the expression of an international trend of architectural thought and is the basis and characteristic of the new world of forms. One could apply the laws which were proving successful in physics and engineering to the study of man himself. Concepts as space, time, attraction, repulsion, force, and power, arise as a result of human experience, we find conceptions of moral or social space in which social events occur; position in social space, and a system of social coordinates defining man’s position in it, attraction and inertia of individuals and groups which is regarded as a system in an equilibrium of centripetal forces.

Psychology

Many psychologists deny the existence of mind, preferring to think of psychology instead as the study of behavior. Concerns of psychology are the study and correlation of abilities, contributing to intelligence; the measuring of personality traits in terms of physiological and social factors, effects of heredity and/or environment on personality, function of the nervous system, individual development, motivation, feeling and emotion, value systems; physiology and psychology of perception, especially in terms of vision, learning, memory and other cognitive processes (Miller 1964). Social psychology is concerned with observation of people and their effects on each other in terms of output, efficiency, well-being and other respects. Some designers impose their own conventions and generally distort one's way of thinking. Markus (1970) suggests that one of the major barriers to useful research in architectural psychology stems from the fact that models of people do not exist which adequately relate the environment to bodily, psychological, social, and verbal behavior. Such a model, however, if it did exist, would be as complex as the world itself. It would be difficult to understand the simulated human being's behavior in the simulated environment as it is now to understand the real human being's behavior in the real environment.

Ventilation and Heating

Fresh air adapted to the purpose of respiration must be admitted at the rate of 4 cubic feet per minute for each individual in the building. The force of impetus of the incoming air ought to compress the air of the room and assist the efflux of the vitiated air through an opening at the highest point of the room towards which the hot air tends to flow. When several opening are above the level of the floor of the room, the highest one is the only one that is acting as an abduction opening, the other lower ones serve as discharging cold air into the room instead of taking it out, in doing so, it may lower the temperature of the hot air and prevent it from escaping. The lower opening should be double the area of the upper one.

Heat in architectural structures results from raising the temperature of the air by means of radiation and conduction. Radiation is diffused through the air without materially raising its temperature, but immediately warming solid bodies exposed to its influence, which in turn give out the acquired heat slowly. When the air is a large apartment is to be raised in temperature, the method of heating by contact is employed; this is effected by volumes of air coming in contact with a heated surface, and becoming raised in temperature, are put in motion, and communicate the heat they receive to surrounding bodies. A small surface if raised to a very great temperature, will heat a large quantity of air if means are taken to pass it rapidly from contact with the heated surface. Ventilation assists the endeavors to warm a building.

Conclusion

Today, architects and planners talk about the need for more low-income housing. But with the failure to get rid of the poverty of those living in public housing, they temper their brick and mortar approach with a call for more people or social programs and a provision for jobs for the

poor that provide self-respect and self-support. We still speak the rhetoric of building humane places for all people. Behind it all we want to build, we want our program to be acted upon, we want to build something great, but people stress the theme of overcrowding, open space, light and air, fire protection and sanitation. Medical authorities had shown that periodic diseases of typhoid, cholera, yellow fever, dysentery, and other day to day diseases like tuberculosis were related to the congestion and unclean condition of the slums. If the masses that compose it are given chance to be healthy, moral and self respecting, we can imagine how would be if the newer districts were planned artistically and provided with proper parks, playgrounds, public baths, and decent mode of transportation.

To predict a future for architecture, one has to envisage new materials, new methods of construction. It may be that the personality traits which determine attitudes to architectural design are also relevant in a discussion of prediction. Prediction calls for the ability to define goals, and to choose among alternative according to what is constant and what is variable. These are considered with the environmental conditions which human being feel comfortable and act effectively. Man builds because he wants to modify the existing climate so that his activities can be carried out conveniently on. One hopes if we can invent a skin for the building which is adjustable so that it reflects solar energy in summer and admits it into the building in winter as needed. Nevertheless, these objections to architecture are trivial because they are based on visual imagery. The appeal certainly does not rest on the force of its intellectual argument, but on the sheer vitality of its graphic presentation. People take great pleasure in extolling the visual delight of areas which, to others appear merely blighted. Architects are concerned with the load of nostalgia, believing that his above all, is what prevents them from achieving the proper new architecture which technology makes possible. Many people need signs of stability in their environment and its absence may be one cause of rigid attitudes. A real danger is that if the plug-in throw-away environment is achieved to any considerable extent, it may have the opposite effect to that which its advocates predict. It may encourage people to structure their lives more rigidly, as a means of achieving personal stability in a world which is in a constant state of flux around them. Suppose that even if the architect tries to produce objects from which all subjective values have been eliminated, the users themselves will personalize these things as soon as they appropriate the space.